

REMARKS

An excess claim fee payment letter is submitted herewith for two excess total claims.

Applicant concurrently files herewith a petition and fee for a one-month extension of time.

Claims 1-8, 11-14 and 17-30 are presently pending in the application. Claims 1, 5, 7, 8, 13, 14, 20, and 22-24 have been amended to more particularly define the invention. Claims 25-30 have been added to assure Applicant the degree of protection to which his invention entitles him. Claims 25-30 are supported by the specification and drawings, for example at page 8, lines 17-27, and in Figure 6.

Claims 1-2, 8-9, 14-15 and 21-24 were rejected under 35 U.S.C. §102(b) as being anticipated by Pennock, U.S. Patent No. 4,885,517. Claims 3-5, 12-13 and 18-20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Pennock in view of Smith et al., U.S. Patent No. 6,546,456. Claims 6-7, 11 and 17 were rejected under 35 U.S.C. §103(a) as being unpatentable over Pennock and Smith et al. in further view of Kao, U.S. Patent No. 5,374,933. These rejections are respectfully traversed.

The claims have been amended to replace the phrases “a forcible restoring section” and “a normal restoring section” with the equivalent phrases “a forcible retract section” and “a normal retract section,” since these are more descriptive of these sections which move the head to the retract position.

The claims have also been amended to replace “value,” in reference to a voltage, with “level” so as to use consistent terms throughout the claims.

Further, the claims have been amended to replace “first voltage level (or ‘value’)” and “second voltage level (or ‘value’)” with “intermediate voltage level” and “bottom voltage

level” or “predetermined intermediate voltage level” and “predetermined bottom voltage level,” since these more clearly bring out the distinctions of the claimed invention over the references.

Additionally, claims 1, 22, and 23 have been amended to reposition the “forcible retract (or ‘restoring’) section” to more clearly describe the invention.

None of these claim amendments affects the scope of the claimed subject matter. The claim amendments have been made only to assure grammatical and idiomatic English and improved form under United States practice, and not made to distinguish the invention over the prior art or narrow the claims or for any statutory requirements of patentability. Further, Applicants specifically state that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Exemplary embodiments of Applicants’ invention include a disk drive apparatus, a disk drive, and a method of controlling a head drive section. In some embodiments, the power voltage is monitored, and if the power voltage goes below a predetermined intermediate voltage level, the head is moved toward the retract position on the basis of the power voltage. If the power voltage goes below a predetermined bottom voltage level, lower than the intermediate voltage level, the head is forcibly brought to the retract position.

In other exemplary embodiments, a controller is responsive to the monitored level of the input voltage being above a predetermined intermediate voltage level, to provide voltage from the voltage input to the rotation drive motor to rotate the information recording disk and to the head drive motor to drive the head in a first direction. The controller is further responsive to the level of the monitored input voltage being equal to or less than the

predetermined intermediate voltage level and above a predetermined bottom voltage level to provide voltage from the voltage input to the head drive motor to drive the head toward the periphery of the information recording disk. The controller is also responsive to the level of the monitored input voltage being equal to or less than the predetermined bottom voltage level to provide reverse electromotive force from the rotation drive motor to the head drive motor to drive the head to the periphery of the information recording disk.

As more thoroughly set forth below, Pennock discloses a voice coil actuator positioning amplifier utilizing voltages Vcc and 5V. In normal operation, the level of a control voltage is monitored, and if the level of the control voltage goes below a predetermined level, the head is driven to the periphery of the information recording disk by a retract voltage VRETR. In the event the power voltage is low, the head is driven to the periphery of the information recording disk by back electromotive force from the spindle motor. Only one low power voltage level is of concern.

Smith discloses a method and apparatus for operating a vehicle mounted disk drive storage device. There is no disclosure or suggestion of action taking place dependent upon the level of the power voltage.

Kao discloses a vehicle navigation system. There is no disclosure or suggestion of action taking place dependent upon the level of the power voltage.

In each of the above independent claims, and thus each of the above dependent claims, retraction occurs in response to either of two levels of the power voltage - - “an intermediate voltage level” which triggers normal retraction, and “a bottom voltage level” which triggers forcible retraction. The bottom voltage level is lower than the intermediate voltage level. The claimed invention has the advantage of performing normal retraction when

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the power voltage is at the intermediate voltage level, before reaching the bottom voltage level that triggers forcible retraction.

On its page 3, the Office Action contends that Pennock discloses a normal restoring or retract section for controlling the head drive section to move the head toward the retract position on the basis of the power voltage when the power voltage goes below a voltage level smaller than the rating level but greater than a lower voltage level, and cites Pennock at column 8, line 41 to column 9, line 44. On its page 15, the Office Action contends that Pennock discloses a second voltage level which is a logic high, and states that a logic high has a threshold voltage level of 4.7 volts, which is a standard logic high in respect to $V_{cc} = 5$ volts, citing Pennock at column 8, line 41 to column 9, line 6. These contentions, and the rejection based on them, are traversed.

At column 4, lines 47-55, Pennock describes the manner in which his retract drive 9 performs a retract function in the absence of an undervoltage condition - - i.e., a normal retract. This normal retract occurs in response to the level of a control voltage applied to input port 109. This control voltage is supplied from an external control system, not shown in the drawings. At column 8, lines 41-53, Pennock states that retract drive 9, which is depicted in Figure 6, does not provide current through the load 36, which is the head actuator, in response to a high level control voltage applied to input port 109, but provides current from VETR 112 (Figure 1) to actuator 36 in response to a low level control voltage applied to input port 109. This operation occurs when the power supply is providing its normal voltage level.

At column 4, lines 25-34, Pennock states that undervoltage sensing stage 8 (Figure 1)

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activates retract drive 9 in response to a low voltage condition at any of the power supply input ports. At column 9, line 67 to column 10, line 10, Pennock states that when the amplifier is used for a disc-head actuator control, the head retract function is executed when a low voltage appears at the power supply input port, using energy from the spindle motor to effect head retraction. Thus, Pennock describes only one low voltage level of the power supply voltage as initiating retraction.

In the claimed invention, retraction occurs in response to either of two levels of the power voltage. The claimed invention has the advantage of performing normal retraction when the power voltage is below an intermediate voltage level, before reaching a bottom voltage level that triggers forcible retraction.

Additionally, when Pennock's undervoltage sensing stage 8 initiates retraction, retract drive 9 instantly responds. Thus, Pennock's amplifier can not trigger normal retraction before forcible retraction.

In view of the foregoing, Applicant submits that claims 1-8, 11-14 and 17-24, all the claims presently pending in the application, are patentably distinct over the prior art of record and are allowable, and that the application is in condition for allowance. Such action would be appreciated.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned attorney at the local telephone number listed below to discuss any other changes deemed necessary for allowance in a telephonic or personal interview.


To the extent necessary, Applicant petitions for an extension of time under 37 CFR

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§1.136. The Commissioner is authorized to charge any deficiency in fees, including extension of time fees, or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

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Respectfully Submitted,


James N. Dresser
Registration No. 22,973

McGinn & Gibb, PLLC
8321 Old Courthouse Road, Suite 200
Vienna, VA 22182-3817
(703) 761-4100
Customer No. 21254